

ABSTRACT

HABILITATION THESIS

***In vivo* experimental models for testing of the effect of plant extracts, probiotics and prebiotics**

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The scientific activity presented in the habilitation thesis refers to the most important research results obtained during the period of 2005-2017. After the PhD graduation, the most important research directions were: experimental phytotherapy and digestive microbiocenosis. Between 2015 and 2016 a new direction of research has emerged - the action of probiotics, prebiotics and synbiotics on physiological parameters of health status.

The thesis is structured in 3 parts, the first part referring to the professional formation. In the second part there are presented the main researched directions that formed the realization of this thesis.

Chapter 1 - ***The action of plant extracts on intestinal symbiotic microbiocenosis in laboratory mice*** - refers to a research that represents an experimental model of *in vivo* testing of organisms reaction to phytotherapy and establishing the therapeutic efficacy of oil extracts (*Ocimum basilicum*, *Tymus vulgaris* and *Calendula officinalis*). The administration of plant extracts has not produced any modification of health or changes in the hematological parameters indicating serious pathological conditions, except for the *Ocimum basilicum* essential oil administration. The biochemical results obtained from the administration of this product are indicators of a hepatotoxic problem, which we consider to be important in establishing the experimental protocols in laboratory mice.

Chapter 2 - ***The influence of plant extracts with antiparasitic potential on the health status of lambs*** - presents data obtained from the evaluation of the therapeutic efficacy of hydroalcoholic extracts (*Ocimum basilicum*, *Tymus vulgaris* and *Artemisia vulgaris*) in digestive endoparasites in lambs and the determination of hydroalcoholic extracts influence on hematological and biochemical parameters which are health indicators. The analysis of the results obtained from the study, reveals that the hydroalcoholic extracts used did not influence the animal health status and had a relatively good anti-parasitic efficacy.

The aspects presented in Chapter 3 - ***Evaluation of the effect of artemisinin on hematology parameters in broilers*** - summarizes some of the results obtained in the Project PN II PCCA type 2 code 110 "Strategy for prevention based on the use of *Artemisia annua* in coccidiosis in broilers ". The main objectives of the study were: assessment of how different concentrations of artemisinin (5 ppm, 50 ppm and 500 ppm) act on hematological parameters (health indicators) and productive (growth rate and feed conversion rate). An important aspect was related to the fact that

administration of a high dose of artemisinin (500 ppm) produced a low growth rate with the increasing of food consumption.

In Chapter 4 - *The Effects of probiotics, prebiotics and synbiotics on hematological parameters in laboratory mice* - the results obtained in this new direction of research are summarized. Our observations indicate that probiotics, prebiotics and synbiotics did not induce changes in the health status and the clinical manifestations of secondary effects were not observed. The probiotic used (bacteria - 250×10^6 live cultures: *Bifidobacterium* BB-12, *Lactobacillus paracasei* 43; *Streptococcus Thermophilus* TH4) determined: stimulation of the immune system by increasing of the total leucocyte number; increasing of the intestinal bacterial species and decreasing of CFU; the largest increasing of growth rate, achieved with a superior feed conversion rate.

The scientific and publishing research activity, after PhD graduation, is represented by: 3 scientific books, 1 chapter in a scientific book published in an international publishing house, 2 didactic textbooks and 3 practical work books. I realized, as main author or co-authored 8 papers in ISI journals; 10 articles / abstracts ISI Proceedings papers and 73 BDI papers. A total of 3 ISI papers were awarded UEFISCDI. The research were materialized in two research projects (1 project PNII Idei - principal researcher and 1 CNCSIS A project - director). The book "Atlas of Diagnosis of Strongilidoses in Equines" (co-author) was awarded with the "Ioan Adameșteanu" prize of the Academy of Agricultural and Forestry Sciences "Gheorghe Ionescu-Sisești" (2009) and with the "Traian Savulescu" prize of the Romanian Academy (2010).

The third part of the thesis presents the plans for the scientific, professional and academic evolution and development. The development plan for my scientific career has as its first objective to increase the scientific quality, visibility and national and international recognition of my own research. My research activity will be focused on three main directions: (1) phytotherapy in veterinary medicine, (2) study of digestive microbiocenosis in animals and (3) evaluation of the action of probiotic, prebiotic, synbiotic and postbiotic nutritional supplements. All these directions present significant opportunities for obtaining valuable results, expanding the research team, involving students and PhD students, by accessing national / international projects to support the research. The proposed activity will correlate research and educational activities and it will promote social innovation in applied research to develop new concepts and innovative solutions in veterinary medicine.